

**ABSTRACT**  
**QUANTUM WELL INTERMIXING**

In a method of manufacturing a photonic integrated circuit having a compound semiconductor structure having a quantum well region, the structure is irradiated using a source of photons to generate defects, the photons having energy ( $E$ ) at least that of the displacement energy ( $E_D$ ) of at least one element of the compound semiconductor. The structure is subsequently annealed to promote quantum well intermixing. The preferred radiation source is a plasma generated using an electron cyclotron resonance (ECR) system. The structure can be masked in a differential manner to selectively intermix the structure in a spatially controlled manner by controlling the exposure portions of the structure to the source of radiation.

(Figure 4)